REMARKS

While this application is technically a continuation of US patent application No. 09/973,693, the Examiner may note that the claims herein closely resemble the set of claims that is present in US Patent Application No. 09/973,697, soon to become abandoned and is, in a real sense, an RCE of that application.

Because this is effectively an RCE of the 09/973,697, it is viewed as appropriate, in order to assist the Examiner, to address some of the issues raised by the Examiner in the aforementioned 09/973,697 application.

First, applicants note that in connection with the specification, the Examiner stated that

> More detailed descriptions for Figs. 14a and 14b are needed in order for one of ordinary skill in the art to understand how the "routing properties of an Arrayed Waveguide Grating" are utilized to stack a serial stream of packets and unstuck a composite packet. Two cited references (Page 16, Paragraph 73, Lines 10-14) do not explicitly explain how to stack a serial steam of packets to form a composite packet and unstuck (sic) a composite packet to a serial stream of packets using "the routing properties of an AWG."

Applicants respectfully traverse

First, the two references identified in paragraph 73 were **NOT** cited in the specification for the purpose of explaining how to stack a serial stream of packets, as the Examiner's statement suggests. As is demonstrated below, that is described in the specification in sufficient detail to enable a person skilled in the art to make and use the invention. Rather, the two references identified in paragraph 73 are cited for the proposition that the properties of AWG were well known in the art at the time of applicants' invention. The Examiner does not seem to dispute this fact (because the Examiner's above-quoted comment is directed to the issue of understanding <u>how</u> the routing properties of an AWG are utilized for stacking). However, if the Examiner has any doubt about the fact AWGs were well known, applicants would willingly add additional references, such as Y. Inoue et al. Athermal Silica-based Arrayed Waveguide Grating (AWG) Multiplexer ECOC97 Sep. 22-25, 1997 pp. 33-36, or a myriad of other publications (including US Patents).

Second, to make sure that the Examiner and applicants are on the same footing in connection with AWGs, the following explicitly establishes what an arrayed waveguide grating is. According to the Encyclopedia of Laser Physics and Technology[1]

> An arrayed waveguide grating is a typically fiber coupled device which can separate or combine signals with different wavelengths. It is usually built as a planar lightwave circuit, where the light coming from an input fiber first enters a multimode waveguides section, then propagates through several single-mode waveguides to a second multimode section, and finally into the output fibers. The wavelength filtering is based on an interference effect and the different path lengths in the single-mode waveguides: any frequency component of the input propagates through all single-mode waveguides, and the output in any channel results from the superposition of all these contributions, which acquire wavelength-dependent phase shifts.

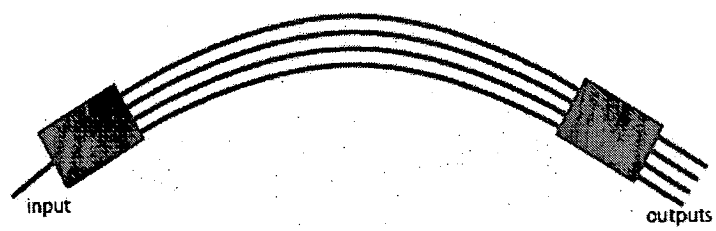

Fig. 1: Structure of an arrayed waveguide grating.

> Arrayed waveguide gratings are mainly applied in optical fiber communication systems, in particular in those based on multi-channel transmission with wavelength division multiplexing, where individual wavelength channels must be combined or separated. One may also use an arrayed waveguide grating to separate the lines in the spectrum of a supercontinuum source.

Based on the *well known characteristics* of AWG elements as explained above by the encyclopedia reference (please note, in particular the last sentence) it is clear that an AWG device can be used to apply a signal that contains a plurality of wavelengths and cause each wavelength to be outputted at a different one of the AWG outputs (see Fig. 1 above). The fact that an AWG device can be used to apply a signal that contains a plurality of wavelengths and cause each wavelength to be outputted at a different one of the outputs is obviously supported by the teachings in the references cited in paragraph 73 of the specification, since these references used this characteristic to create an N×N optical switch.

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[1] http://www.rp-photonics.com/arrayed_waveguide_gratings.html

Third, the use of the routing properties of an AWG in the context of FIGs. 14a and 14b is totally straight forward, and it is believed that an artisan with even a minimum skill in the art can create a composite packet unstacker by the use of AWG elements, since element 1505 of FIG. 14A can be easily constructed with two AWG, as shown below.

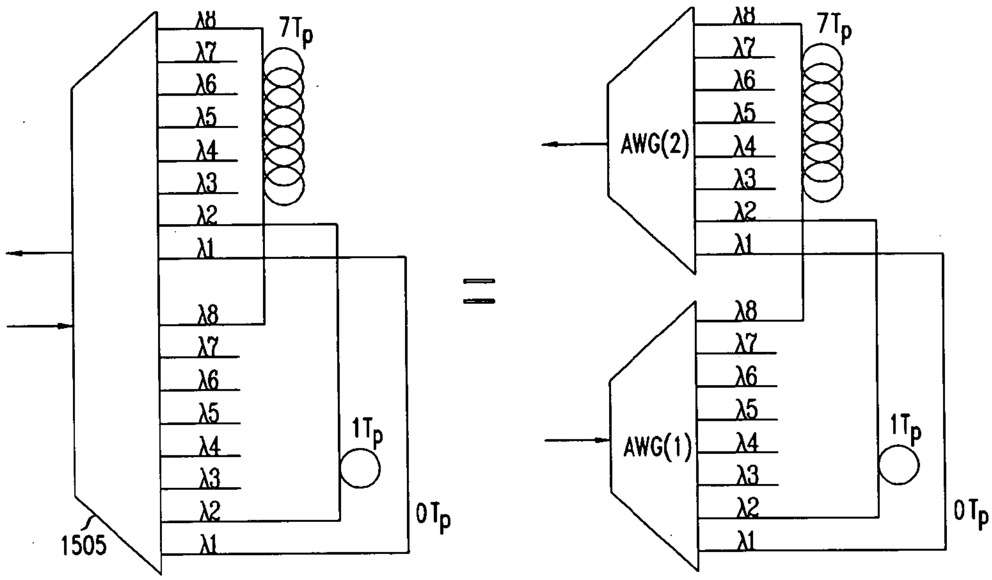

FIG. 14A

A composite packet (which is a packet that within a given time slot contains a plurality of wavelengths) is applied to AWG(1), and the outputs of AWG(1) are the signals at the different wavelengths. The signal at wavelength $\lambda 1$ is delayed 0 time intervals (as shown in FIG. 14A – duplicated above) and applied to a port of AWG(2) that corresponds to $\lambda 1$. The signal at wavelength $\lambda 2$ is delayed 1 time interval and applied to a port of AWG(2) that corresponds to $\lambda 2$, and so on up to the signal at wavelength $\lambda 8$ that is delayed 7 time intervals and is applied to a port of AWG(2) that corresponds to $\lambda 8$. The output of AWG(2), therefore, presents the signal of $\lambda 1$, followed by the signal of $\lambda 2$ one time interval later, and so on until 7 intervals later it presents the signal of $\lambda 8$. This is the unstacking function. The stacking function (FIG. 14B) is completely synonymous, with the input applied to the single input side of AWG(2) and the output derived from the single input side of AWG(1).

Fourth, the Examiner is respectfully requested to consider the enclosed 37CFR1.132 Declaration.

It is respectfully submitted that a considered assessment of the above clearly overcomes any assertion of a deficiency in the specification.

In the 09/973,697 application that Examiner cited an article by Zang et al, titled "Photonic slot routing in all-optical WDM Mesh Networks," Global Telecommunications Conference, *Globercom '99*. Applicants argued that this reference is not enabling and cited case law in support of the proposition that, therefore, the article cannot be used as a reference. The Examiner countered that the paper was presented in an international conference and that, therefore, applicants' claim of lack of enablement does not disqualify the reference. Respectfully, the fact that the article was presented in an international conference is immaterial. If the reference is not enabling, that fact does not change per force of it having been presented in an international conference.

Substantively, the Zang et al article employs the "photonic slot" concept that, in a sense, is similar to what the instant application calls a "composite packet." The Zang et al photonic slot occupies a time slot, packets at different wavelengths at placed into the slot at will, <u>and the time slot has a common destination address for all of that packets that are carried in that time slot</u>. Page 1449, right column, lines 29-32. In contradistinction, claim 14 specifies that the composite packet

> contains a plurality of constituent packets that <u>are not constrained</u> to all have a particular node of the backbone ring as a destination of the constituent packets (emphasis supplied)

which is contrary to the teachings of Zang et al. Zang et al also do not describe an

> element of node A that is capable of adding a composite packet to said backbone ring from said first optical port and concurrently dropping a composite packet from said backbone ring into a second optical port

which claim 14 specifies.

Favorable consideration of the claims is respectfully solicited.

Respectfully,
Mikhail Boroditsky
Nicholas J. Frigo

Dated: 1/24/06

By [signature]
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IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Patent Application

Inventor(s)	Mikhail Boroditsky Nicholas Frigo	Case Name	Boroditsky 2000-0578
Filing Date	October 11, 2001	Serial No.	09/973,697
Examiner	Wang, Quan Zhen	Group Art Unit	2633
Title	Method for Composite Packet-Switching Over WDM By Transparent Photonic Slot Routing		

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231
SIR:

Declaration Pursuant to 37 CFR 1.132

1. My Name is Henry Brendzel. I am an attorney of record in the above-identified application, but I did not prepare the filed patent application.
2. I have been working in as a patent attorney for about 30 years, and before that I worked as a Member of the Technical Staff at Bell Telephone Laboratories, Inc.
3. I read the above-identified application, and without consulting with the inventors I was able to understand how to make and use the invention.
4. I am probably less qualified than a person skilled in the art to which the invention disclosed in the above-identified application relates.
5. I have also read the Examiner's assertion that:

   > More detailed descriptions for Figs. 14a and 14b are needed in order for one of ordinary skill in the art to understand how the "routing properties of an Arrayed Waveguide Grating" are utilized to stack a serial stream of packets and unstuck a composite packet.

6. I respectfully disagree because I found the specification sufficiently descriptive. FIGS. 14A and A show a signal entering a mux/demux device, and a signal leaving a mux/demux device (both on the left side of the figure). On the right ride of the figure there is a plurality of terminals that correspond to outputs of the demux portion, and a plurality of terminals that correspond to the inputs of the mux portion. A collection of delay elements having 0, 1, 2,...7T_p delays,

respectively, connect the output terminals of the demux portion to input terminals of the mux portion, creating a composing, or decomposing function for the composite packet, depending on the arrangement of the delays.

7. As to how to implement the mux/demux device, the specification suggests that arrayed waveguide grating (AWG)devices can be used. Even a cursory review of the literature available at the time of the filing of the invention disclosed in the above-identified application reveals that and AWG device is if a signal applied to a particular input contains a plurality of wavelengths, each one of the different wavelengths comes out of a different one of a set of outputs. This, of course, is precisely what is needed to implement the mux/demux device.
8. In my humble opinion, if I am able to fully understand how make and use the elements depicted in FIGS. 14A and B, a person skilled in the art would have no problem whatsoever.

Respectfully submitted,

Henry T. Brendzel 1/24/06